

What is claimed is:

1. An electrochemical cell, which comprises:
- a) an anode;
 - b) a cathode of a first fluorinated carbon having a relatively high energy density but a relatively low rate capability and a second cathode active material having a relatively low energy density but a relatively high rate capability; and
 - c) an electrolyte comprising at least one solvent for activating the anode and the cathode, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation.
2. The electrochemical cell of claim 1 wherein the cell is dischargeable at a current pulse of at least about 15.0 mA/cm²
3. The electrochemical cell of claim 1 wherein the fluorinated carbon synthesized from the fibrous carbonaceous material has a BET surface area of greater than about 250 m²/g.
4. The electrochemical cell of claim 1 wherein the fluorinated carbon synthesized from the fibrous carbonaceous material has a particle size volume percent of less than about 15 μ m.

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10. The electrochemical cell of claim 1 wherein the cathode has the configuration: SVO/current collector/SVO/CF_x/SVO/current collector/SVO.
- 5 11. The electrochemical cell of claim 1 wherein the anode is lithium and the cathode has the configuration: SVO/current collector/CF_x, with the SVO facing the lithium anode.
- 10 12. The electrochemical cell of claim 1 wherein the first cathode active material is sandwiched between a first and second current collectors with the second cathode active material contacting the first and second current collectors opposite the first cathode active
- 15 material.
13. The electrochemical cell of claim 12 wherein the first and second current collectors are titanium having a coating selected from the group consisting of
- 20 graphite/carbon material, iridium, iridium oxide and platinum provided thereon.
14. The electrochemical cell of claim 1 wherein the anode is lithium, the first cathode active material is
- 25 CF_x, the second cathode active material is SVO and the first and second current collectors are titanium or aluminum.
15. The electrochemical cell of claim 1 wherein the
- 30 first fluorinated carbon is blended with the second cathode active material.

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20. An electrochemical cell, which comprises:

- a) a lithium anode;
- b) a cathode of a first cathode active material of CF_x sandwiched between a first and second current collectors with a second cathode active material selected from the group consisting of SVO, CSVO, V_2O_5 , MnO_2 , LiCoO_2 , LiNiO_2 , LiMnO_2 , CuO_2 , TiS , Cu_2S , FeS , FeS_2 , CVO, and mixtures thereof, contacting the first and second current collectors opposite the first cathode active material; and
- c) an electrolyte comprising at least one solvent for activating the anode and the cathode, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation.

21. The electrochemical cell of claim 20 wherein the current collectors are of titanium.

22. A method for powering an implantable medical device, comprising the steps of:

- a) providing the medical device;
- b) providing an electrochemical cell comprising the steps of:
 - i) providing an anode of an alkali metal;
 - ii) providing a cathode of a first cathode active material of CF_x sandwiched between first and second current collectors with a second cathode active material having a relatively low energy density but a relatively high rate capability in

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comparison to the first cathode active material contacting the first and second current collectors opposite the first cathode active material; and

5 iii) activating the anode and cathode with an electrolyte comprising at least one solvent, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation; and

10 c) electrically connecting the electrochemical cell to the medical device.

15 23. The method of claim 22 including discharging the cell to provide a current pulse of at least about 15.0 mA/cm².

20 24. The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a BET surface area of greater than about 250 m²/g.

25 25. The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a particle size volume percent of less than about 15 μm.

30 26. The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a particle size surface area percent of less than about 3.5.

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27. The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a mean DTA exotherm of about 652°C to about 656°C.

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28. The method of claim 22 including selecting the second cathode active material from the group consisting of SVO, CSV₂O, V₂O₅, MnO₂, LiCoO₂, LiNiO₂, LiMnO₂, CuO₂, TiS, Cu₂S, FeS, FeS₂, CVO, and mixtures thereof.

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29. The method of claim 22 wherein the anode is lithium, the first cathode active material is CF_x and the second cathode active material is SVO.

15 30. The method of claim 22 including providing the cathode having the configuration: SVO/current collector/CF_x/current collector/SVO.

20 31. The method of claim 22 including providing the cathode having the configuration: SVO/current collector/SVO/CF_x/SVO/current collector/SVO.

25 32. The method of claim 22 including providing the anode of lithium and the cathode having the configuration: SVO/current collector/CF_x, with the SVO facing the lithium anode.

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